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Relevance scale ☐ ☒**1** [Machine interpretation of CAD data for manufacturing applications](#)

Qiang Ji, Michael M. Marefat

September 1997 **ACM Computing Surveys (CSUR)**, Volume 29 Issue 3Full text available: [pdf \(1.90 MB\)](#)
 Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

Machine interpretation of the shape of a component for CAD databases is an important problem in CAD/CAM, computer vision, and intelligent manufacturing. It can be used in CAD/CAM for evaluation of designs, in computer vision for machine recognition and machine inspection of objects, and in intelligent manufacturing for automating and integrating the link between design and manufacturing. This topic has been an active area of research since the late '70s, and a significant number of computat ...

Keywords: artificial intelligence, automated process planning, computer-aided design, computer-integrated manufacturing, feature recognition, flexible automation

2 [Special issue: AI in engineering](#)

D. Sriram, R. Joobbani

January 1985 **ACM SIGART Bulletin**, Issue 91Full text available: [pdf \(8.79 MB\)](#)Additional Information: [full citation](#), [abstract](#)

The papers in this special issue were compiled from responses to the announcement in the July 1984 issue of the SIGART newsletter and notices posted over the ARPAnet. The interest being shown in this area is reflected in the sixty papers received from over six countries. About half the papers were received over the computer network.

3 [Special issue on spatial database systems: An introduction to spatial database systems](#)

Ralf Hartmut Güting

October 1994 **The VLDB Journal — The International Journal on Very Large Data Bases**

Volume 3 Issue 4

Full text available: [pdf \(2.50 MB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

We propose a definition of a spatial database system as a database system that offers spatial data types in its data model and query language, and supports spatial data types in its implementation, providing at least spatial indexing and spatial join methods. Spatial database systems offer the underlying database technology for geographic information systems and other applications. We survey data modeling, querying, data structures and algorithms, and system architecture for such systems. The em ...

4 Layout tools for analog ICs and mixed-signal SoCs: a survey

Rob A. Rutenbar, John M. Cohn


May 2000 **Proceedings of the 2000 international symposium on Physical design**

Full text available:  [pdf\(247.03 KB\)](#) Additional Information: [full citation](#), [references](#)

5 Modeling the storage architectures of commercial database systems

D. S. Batory

December 1985 **ACM Transactions on Database Systems (TODS)**, Volume 10 Issue 4


Full text available:  [pdf\(4.46 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

Modeling the storage structures of a DBMS is a prerequisite to understanding and optimizing database performance. Previously, such modeling was very difficult because the fundamental role of conceptual-to-internal mappings in DBMS implementations went unrecognized. In this paper we present a model of physical databases, called the transformation model, that makes conceptual-to-internal mappings explicit. By exposing such mappings, we show that it is possible to model the storage ...

6 Dynamic segmentation and incremental editing of boundary representations in a collaborative design environment

Di Wu, Radha Sarma

May 2001 **Proceedings of the sixth ACM symposium on Solid modeling and applications**


Full text available:  [pdf\(1.35 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Currently boundary representations (b-reps) are a convenient means to exchange solid models between applications in a distributed design environment. There are two widely used approaches that help maintain the consistency of b-reps between applications, e.g., when a b-rep is modified in one application and needs to be updated in the other. One approach involves using a common database of b-reps where consistency is automatically guaranteed. The other approach involves using a repeated transfe ...

7 On translating geometric solids to functional expressions

Omid Banyasad, Philip T. Cox

August 2003 **Proceedings of the 5th ACM SIGPLAN international conference on Principles and practice of declarative programming**

Full text available:  [pdf\(490.65 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Language for Structured Design (LSD) is a high level, visual, logic programming language for design of structured objects. LSD combines the design and programming activities in a homogeneous programming/design environment by extending Lograph, a visual logic programming language, with the notion of solids and operations on them. At the back-end however, a solid modeling kernel for maintaining low level description of solids and operations is required. In this paper, we report on our progress towa ...

Keywords: design language, functional programming, geometric programming, translation, visual logic programming

8 A feature-based approach for smooth surfaces

Shigeo Takahashi, Yoshihisa Shinagawa, Tosiya L. Kunii

May 1997 **Proceedings of the fourth ACM symposium on Solid modeling and applications**

Full text available:  [pdf\(1.78 MB\)](#)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

9 Abstract routing of logic networks for custom module generation

S. T. Healey, W. J. Kubitz

October 1987 **Proceedings of the 24th ACM/IEEE conference on Design automation**

Full text available:  [pdf\(845.98 KB\)](#)


Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper describes a switchbox-type router for custom VLSI module generation as performed by a module planner. A module is decomposed into abstract cells consisting of global routes and Boolean functional specifications. Each abstract cell is given to a cell synthesizer which generates the circuit layout and through-the-cell routing. Abstract routing for a module planner is in some sense similar to switchbox routing to the degree that all of the routes are generated interactively.

10 Highlights of CMU research on CAD, CAM and CAT of VLSI circuits

John Paul Shen

November 1999 **Proceedings of 1996 ACM Fall joint computer conference**

Full text available:  [pdf\(1.35 MB\)](#)

Additional Information: [full citation](#), [references](#), [index terms](#)

11 Accurate interconnect modeling: towards multi-million transistor chips as microwave circuits

N. P. van der Meijs, T. Smedes

January 1997 **Proceedings of the 1996 IEEE/ACM international conference on Computer-aided design**

Full text available:  [pdf\(148.96 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

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In this tutorial we discuss concepts and techniques for the accurate and efficient modeling and extraction of interconnect parasitics in VLSI designs. Due to increasing operating frequencies, microwave-like effects will become important. Therefore stronger demands are put on extraction and verification tools. We indicate the state-of-the-art for capacitance, resistance and substrate resistance extraction and discuss some open problems. We also discuss several model reduction techniques as well as ...


Keywords: Physical Design Verification, Interconnect Modeling, Interconnect Resistance Extraction, Interconnect Capacitance Extraction, Substrate Resistance Extraction

12 Cellular texture generation

Kurt W. Fleischer, David H. Laidlaw, Bena L. Currin, Alan H. Barr

September 1995 **Proceedings of the 22nd annual conference on Computer graphics and interactive techniques**

Full text available:  [pdf\(268.98 KB\)](#)

 [ps\(5.03 MB\)](#)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: bump mapping, constraints, data amplification, developmental models, displacement mapping, particle systems, texture mapping

13 Dissertation Abstracts in Computer Graphics

January 1992 **ACM SIGGRAPH Computer Graphics**, Volume 26 Issue 1

Full text available:  [pdf\(2.53 MB\)](#)


Additional Information: [full citation](#)

14 Special issue on spatial database systems: Management of multidimensional discrete data

Peter Baumann

October 1994 **The VLDB Journal — The International Journal on Very Large Data Base:**

Volume 3 Issue 4

Full text available:  [pdf\(2.30 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

Spatial database management involves two main categories of data: vector and raster data. The former has received a lot of in-depth investigation; the latter still lacks a sound framework. Current DBMSs either regard raster data as pure byte sequences where the DBMS has no knowledge about the underlying semantics, or they do not complement array structures with storage mechanisms suitable for huge arrays, or they are designed as specialized systems with sophisticated imaging functionality, but not ...

Keywords: Multimedia database systems, image database systems, spatial index, tiling

15 A provably correct feature extractor for parts with cylindrical and planar surfaces

Sanjeev N. Trika, Rangasami L. Kashyap

December 1995 **Proceedings of the third ACM symposium on Solid modeling and applications**


Full text available:  [pdf\(876.57 KB\)](#)

Additional Information: [full citation](#), [references](#), [index terms](#)

16 Computational strategies for object recognition

Paul Suetens, Pascal Fua, Andrew J. Hanson

March 1992 **ACM Computing Surveys (CSUR)**, Volume 24 Issue 1

Full text available:  [pdf\(6.37 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

This article reviews the available methods for automated identification of objects in digital images. The techniques are classified into groups according to the nature of the computational strategy used. Four classes are proposed: (1) the simplest strategies, which work on data appropriate for feature vector classification, (2) methods that match models to symbolic data structures for situations involving reliable data and complex models, (3)

approaches that fit models to the photometry and ...

Keywords: image understanding, model-based vision, object recognition

17 Parallelizing a new class of large applications over high-speed networks

H. T. Kung, Peter Steenkiste, Marco Gubitoso, Manpreet Khaira

April 1991 **ACM SIGPLAN Notices , Proceedings of the third ACM SIGPLAN symposium on Principles and practice of parallel programming**, Volume 26 Issue 7

Full text available:  [pdf\(1.13 MB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

18 Reuse of design objects in CAD frameworks

Joachim Altmeyer, Stefan Ohnsorge, Bernd Schürmann

November 1994 **Proceedings of the 1994 IEEE/ACM international conference on Computer-aided design**

Full text available:  [pdf\(851.80 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The reuse of well-tested and optimized design objects is an important aspect for decreasing design times, increasing design quality, and improving the predictability of designs. Reuse spans from the selecting cells from a library up to adapting already designed objects. In this paper, we present a new model for reusing design objects in CAD frameworks. Based on experiences in other disciplines, mainly in software engineering and case-based reasoning we developed a feature-based model ...

19 The Quadtree and Related Hierarchical Data Structures

Hanan Samet

June 1984 **ACM Computing Surveys (CSUR)**, Volume 16 Issue 2

Full text available:  [pdf\(4.87 MB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

20 Structured design of microelectromechanical systems

Tamal Mukherjee, Gary K. Fedder

June 1997 **Proceedings of the 34th annual conference on Design automation - Volume 00**

Full text available:  [pdf\(134.67 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)
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In order to efficiently design complex microelectromechanical systems (MEMS) having large numbers of multi-domain components, a hierarchically structured design approach that is incompatible with standard IC design is needed. A graphical-based schematic, or structural view is presented as a geometrically intuitive way to represent MEMS as a set of interconnected lumped-parameter elements. An initial library focuses on suspended-MEMS technology from which inertial sensors and other mechanical mechanisms can ...

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